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Creemers, M.R.

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The Move to Ex-Ante

Marcel R. Creemers

Research Memorandum 1997-55

November 1997



Faculty of Economics, Business Administration and Econometrics

Serie Research Memoranda

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Vrije Universiteit Amsterdam

The Move to Ex-Ante

By: Marcel R. Creemers
Vrije University Amsterdam
De Boelelaan 1105
1081 HV Amsterdam
The Netherlands
Email: mcreemers @ bik.econ.vu.nl

Abstract

*The electronic market hypothesis (EMH) has found little support in research practice. Alternative hypotheses have been formulated and tested with more satisfactory results. However, today's Internet creates new business opportunities which seem to support the original EMH (e.g. Amazon bookshop). This implies that the EMH may be correct in forecasting electronic markets, but wrong in determining the conditions under which this would take place. Moreover, modern electronic markets appear not always to evolve along the predicted process (biased, unbiased, personalized markets). This article **investigates former EMH-related research (Hess & Kemerer, 1994)** and analyzes a **few** modern Internet business successes and failures, concluding that (1) the EMH-condition "complexity of the product description" appears to be equivocal and (2) the degree to which ICT supports Ex-Ante actions (such as exchanging product and supplier information, advise, quotes and negotiating) seems to be an important discriminating factor between success and failure in electronic commerce (whether in markets or in hierarchies). Furthermore, it is shown that virtual communities, the evolution of which is not covered by the EMH, may play an important role as electronic markets too. It is shown that augmentation of the EMH can not solve the problems, and a **new** hypothesis, the Move to Ex-Ante hypothesis, is formulated.*

Keywords: electronic markets, transaction costs, virtual communities.

1. Introduction

With the postulation of the electronic market hypothesis (EMH), Malone et al. (1987) have introduced transaction cost economics to the information sciences. The EMH assumes that the introduction of information and communication technology (ICT) will decrease transaction costs (costs of coordination), and, hence, will favor the evolution of market governance structures that have always been hampered by high coordination costs. The EMH recognizes two conditions, partly derived from transaction cost economics: asset specificity and complexity of the product description. When scores on both conditions are low, then electronic markets are expected to evolve.

According to the EMH, electronic markets are to evolve either from nonelectronic markets (market governance) or from electronic or nonelectronic hierarchies (unified governance). The latter evolution is said to take place in a sequence of stages (biased markets, unbiased markets), eventually leading to a final situation in which markets **provide personalized decision aids to help individual buyers select from the alternatives available** (personalized markets).

This hypothesis has not been very successful so far. Hess & Kemerer (1994) e.g. have investigated the life cycles of 5 electronic mortgage systems (computerized loan origination, CLO), that were introduced in the US in the nineteen eighties. They found (1) that none of the electronic market systems succeeded, (2) that none of the electronic hierarchy systems had been able to develop into an electronic market system, and (3) that the most successful system (largest volume of generated loans) appeared to be an electronic hierarchy. The researchers concluded that either the research predicted by the EMH require a longer gestation period or that the underlying hypothesis will require augmentation, in particular the condition **complexity of the product description**, in order to fully explain the results in the home mortgage market.

In other segments of the economy electronic markets do evolve. The Amazon **Bookshop** e.g., in EMH terms a slightly biased electronic bookmarket, acts as a broker for more than 2.5 million titles, whereas it keeps only 400 titles in stock. Amazon provides prospective book buyers with information, not only titles, authors, content and prices, but also alternative titles and authors that cover the customer's topic of interest. Amazon's broker function comes best to expression in providing readers' comments, even if these comments give a negative impression of a certain title. In EMH terms, Amazon provides **personalized decision aids to help individual buyers select from the alternatives available**. However, Amazon still does not obey the EMH, since it has never been a nonelectronic market nor an electronic or nonelectronic hierarchy. It simply started as a new economic activity.

This and other successful entries of consumer goods brokers on the Internet suggest that the problem with the EMH is not so much the prediction of electronic markets in itself, but rather the formulation of the evolution process and the conditions under which this would take place.

However, apart from these research problems, the EMH has encountered more fundamental critique too. Since the publication of the EMH, a number of authors (e.g. Clemons & Row, 1993; Bakos & Brynjolfsson, 1993) have argued that the proposed relation between ICT and electronic markets is not that straight. They postulated that there are at least 3 shifts from various governance structures (hierarchy, spotmarket and portfolio) to a fourth type (bilateral or trilateral governance) in which organizations intensify cooperation in **small**, but tightly coupled groups, being neither markets nor hierarchies. Clemons et al. (1993) have called this hypothesis the "Move to the Middle" Hypothesis (MMH). Research has shown that this move to the middle is indeed taking place in **EDI-facilitated** supply chain and outsourcing relationships (e.g. Clemons & Row, 1993; Womack et al., 1990).

The MMH is both more detailed and more focused than the EMH. It is more detailed because it recognizes governance structures between markets and hierarchies, making it stronger in explaining interfirm cooperation. It is more focused because it restricts to what transaction costs economists (e.g. Williamson, 1975; 1985) have called the Ex-Post stage of transactions. Economic activity in the Ex-Post stage, such as monitoring and safeguarding activity **after** the agreement has been established, differs greatly from that in the Ex-Ante stage, where searching for new business partners, giving quotes, bargaining, contracting, etc. are dominant.

The EMH does not differentiate between the stages, which often invites researchers, such as Hess & Kemerer, to include both Ex-Ante and Ex-Post stages in their research models (for more details, see section 2). However, it is unlikely to assume the role and impact of ICT to be the same in both stages of the transaction. If technology is utilized to support customers in their decision process or to support suppliers in their search for customers who are willing to buy products (**moment** of value), then it supports Ex-Ante rather than Ex-Post activity. If technology is utilized to support the **finetuning** of production processes in cooperating firms (e.g. EDI), or to support an established relationship (e.g. electronic banking), then it supports Ex-Post rather than Ex-Ante activity.

The MMH does not suffer from this generalization, because it focuses on Ex-Post activity, as can be concluded from the MMH-cases (EDI-clusters and outsourcing). However, this focus on **Ex-Post** activity does not take the study of specific Ex-Ante activity one step further. This explains the scope of this article, which is to investigate the role of ICT in the Ex-Ante part of the transaction, and to formulate a new hypothesis adjacent to the Ex-Post-focused MMH.

This article is structured as follows. Section 2 reviews the failures of electronic mortgage markets as shown by Hess & Kemerer (1994). It makes clear that the EMH condition **complexity of the product description** is equivocal, and that Ex-Ante processes are still not properly understood. Section 3 elaborates on the content of Ex-Ante processes and distinguishes between supplier and customer processes. Section 4 elaborates on the distribution of Ex-Ante activity and distinguishes between access, availability and functionality of actors in the Ex-Ante process, being important dimensions of Ex-Ante activity. Measures and cases are given. Section 5 shows that virtual communities may play an important role in the evolution process of electronic markets, because they support Ex-Ante activity on the customer side. Section 6 shows that there are 3 types of markets: supplier markets, customer markets and balanced markets, in which different Ex-Ante processes are supported. Section 7 shows that the EMH cannot be augmented and formulates a new hypothesis, The Move to Ex-Ante Hypothesis, MEA

2. The failure of the electronic mortgage market

Hess & Kemerer (1994) investigated the life cycles of 5 electronic mortgage systems (computerized loan origination, CLO), that were introduced in the US in the nineteen eighties:

- First Boston Sheltemet;
- PRC Advanced Systems Inc.'s LoanExpress;
- Rennie Mae, developed by a realtor's association;
- Prudential's CLOS;
- Citicorp's Mortgage Power Plus.

The systems were far from similar. Some were electronic market systems (transparent presentation of competing loan offers), whereas others were electronic hierarchies (single lender). Some covered only the primary market (customers and lenders), whereas others covered both primary and secondary market (also lenders and investment bankers). Some systems supported large parts of the loan origination processes, whereas others were simple loan listing systems provided by a

limited number of lenders. This variety allowed the researchers to study a number of stages in the evolution process from electronic hierarchies into electronic markets as predicted by the EMH, but it also increased the complexity of the research model, including various relations between market players (customers, realtors, lenders and investment bankers).

Hess & Kemerer **payed** special attention to the EMH conditions, being asset specificity and complexity of the product description. The technology used in the **CLO** systems was relatively common and should not require large, transaction-specific investments. The complexity of the product description should not pose a barrier to electronic mediation in the mortgage market, because even the descriptions of more complex mortgages can generally be accommodated in the commonly accepted industry terminology. Given these low scores on both conditions, the researchers expected electronic mortgage markets to evolve.

However, the results showed (1) that none of the electronic market systems succeeded, (2) that none of the electronic hierarchy systems had been able to develop into an electronic market system, and (3) that the most successful system (largest volume of generated loans) appeared to be an electronic hierarchy. The researchers concluded that they had found very little support for the EMH and only some support for the MMH.

Evaluation of the **CLO** research and conclusions poses three questions.

1. The first question is: exactly how do the systems influence transaction costs in the various stages of all transactions in the model?

The research model is relatively complex. It contains many actors (customers, realtors, lenders, investment bankers), many different transactions in both primary and secondary markets, and both Ex-Ante and Ex-Post activity. The introduction of loan computer systems in the realtors' offices presumes the **existence** of a contract and, hence, Ex-Post activity between lenders, bankers and realtors. At the same time these systems are meant to support the customer's decision process in the Ex-Ante stage of the transaction. The **CLO** study does not make clear which stages of which transactions profited most of the introduction of the systems.

2. The second question is: to what extent could the failure of the electronic mortgage markets be attributed to an insufficient Ex-Ante support?

The relations in the model, and even the various stages of the transactions are not independent. They influence each other. If an electronic market system does not sufficiently support customers' decision processes (Ex-Ante in the primary market), it will not only fail as a primary market system, but it will also indirectly terminate the cooperation between the suppliers (Ex-Post in the secondary market). So, even a *move to the middle* in the secondary market may be hampered by unsatisfactory Ex-Ante support in the primary market.

3. The third question is: should the *complexity of the product description* be estimated from the supplier's or from the customer's perspective, or both?

The EMH-based research hypothesis formulated by Hess & Kemerer predicts that:

"... customers, in this case borrowers, will be driven by their desire for lower interest and closing costs to favor electronic markets over electronic hierarchies as forms of industry organization." (p. 256).

However, it must be questioned seriously whether time and cost reduction alone represent

sufficient customer value in the mortgage market. In their conclusions, the researchers suggest that they may have underestimated the complexity of a mortgage for customers in their statement that the complexity of the product description should not pose a barrier to electronic mediation in the mortgage market, because even the descriptions of more complex mortgages can generally be accommodated in the commonly accepted industry terminology. This may be true for professional service suppliers, who can readily determine monthly payments, interest charged, and principal **payed** at any stage in the life of the loan, but to the home buyer a mortgage transaction is complex and important.

These questions make clear that the failures of electronic mortgage markets are still not properly understood, and that this may be due to a poor understanding of Ex-Ante processes and the role of ICT therein. To further explore this role, the next three sections will deal with three different aspects of Ex-Ante processes: (1) the content and (2) the distribution of Ex-Ante activity, and (3) virtual communities respectively.

3. Content of Ex-Ante processes

In the Ex-Ante stage of a transaction, suppliers and customers are looking for business opportunities. The costs of searching, communicating and settling agreements are called transaction costs Ex-Ante. Since transactions generally involve suppliers and customers, two different Ex-Ante processes can be distinguished: the supplier's process and the customer's process.

Suppliers spend energy and money to find prospective customers *in the moment of value*, to advise them, to give quotes, to bargain, and, eventually, to sell. Lenders, e.g., try to find customers who want to buy a car or a home. Normally, home buyers go to a lender's office when they have already decided to buy a home and are now interested in financial details and process information. If lenders like to meet these customers earlier, then they have to find other ways to get into contact. One way to achieve this is putting systems *in* realtors' offices, like in the CLO cases, but another one is helping home buyers to select a solid house and a suitable living environment, like some European banks and building societies do on their Internet sites (e.g. see Barclays, 1997).

In general, the supplier's Ex-Ante process comprises a number of steps:

1. **Knowledge** (the supplier searches for relevant customer information, which may be provided by the customer or bought from others)
2. **Interaction** (the supplier wants to communicate about his product range with prospective customers)
3. **Advise** (the supplier wants to help the prospective customer to make product choices and decisions)
4. **Quotes** (the supplier wants to give quotes for his products)
5. **Agreement** (the supplier wants to enter into an agreement with the customer and has to prepare and process documents)

The supplier's Ex-Ante transaction costs are high when customers are hard to find or hard to be convinced to buy the supplier's good or service. These factors complicate the supplier's Ex-Ante process. The EMH-concept **complexity of the product description** is only part of the supplier's Ex-Ante process. Other factors are market structure, accessibility of prospects, available customer information and the like. In other words: it may be more difficult to **find** a prospective customer in his or her moment of value than to sell this person a complex product.

The supplier process can be supported by several ICT products, such as market or customer databases, intelligent search systems (expert systems, neural networks, genetic algorithm), smart cards (loyalty programs), and homepages and applets on the Internet.

Customers, on the other side, spend energy and money to search and select suitable offers. Their transaction costs are high, when it is hard to find information and to decide between alternative solutions, products and suppliers. This complicates their Ex-Ante process. The EMH concept complexity of the product description will be frequently related to the complexity of the customer's Ex-Ante process, because it will require more time and costs to select complex products, but Champy (1996) shows that there are a multitude of other relevant factors, **all** being fundamental customer needs that can be addressed and enhanced by online technology:

1. **Knowledge** (the customer searches for relevant information that can help him or her make sound buying decisions)
2. **Interaction** (the customer wants to communicate about a product with the potential providers)
3. **Networking** (the customer wants to find and talk to others who already use the product or who are also considering a purchase)
4. **Sensory experience** (the customer wants to see, hear or touch the product to arrive at a consumption decision)
5. **Ubiquity** (the customer wants to have the products at the time and place he or she needs them)
6. **Aggregation** (the customer wants the supplier(s) to bring together a number of required goods and services in the process)
7. **Customization** (the customer wants the supplier to tailor the product to the individual's needs)

Before entering into any agreement, customers will, depending on the product and individual preferences, want to go through these steps, and doing so, they will be susceptible to help and assistance provided by suppliers or brokers. In other words: it's not so much the complexity of cars that makes them hard to sell electronically, but rather the customer's wish to make a test drive.

The customer process can be supported by several ICT products, such as browsers, search engines, electronic agents, and communication facilities on the Internet, accessible product databases and decision support tools.

In figure 1, the customer and the supplier Ex-Ante process are combined in one scheme. It shows that Knowledge, Interaction and Agreement are common steps.

1	Knowledge	
2	Interaction	
3	Networking	Advise
4	Sensory experience	Quote
5	Ubiquity	
6	Aggregation	
7	Customization	
8	Agreement	

Figure 1. *Steps in the customer and supplier Ex-Ante process*

When put in this framework, it must be concluded that the CLO systems supported the lenders' Ex-Ante processes rather than those of the customers. Putting computers in realtors' offices allows lenders to meet prospective borrowers in an early stage of their home buying process (knowledge and interaction), and all systems supported advise (loan selection). Quotes and agreements were not equally supported by all systems. Only Shelternet and Mortgage Power Plus covered all steps (loan application, prequalification, underwriting and origination). The systems generally did not support the customer's Ex-Ante process, except for limited knowledge and interaction.

Compared to all CLO systems, the Ex-Ante support provided by Amazon bookshop is much more advanced, *since* it offers support of *both* suppliers' and the customer's Ex-Ante processes. Not only does it allow a large number of publishers to find prospective customers (from knowledge to agreement) in their moment of value, something they could not achieve before, but it also supports a number of Champy's steps: knowledge, interaction, networking (readers' comments) and, to a limited extent, sensory experience (e.g. read the content, see the cover) and ubiquity (e.g. chose shipping mode).

Of course, supporting Ex-Ante processes in a book shop is simpler than doing so in a bank, but this is not so much caused by the complexity of the product description, but rather by the role ICT can play in the customer process. If this role is limited, then *neither* electronic markets *nor* electronic hierarchies are likely to evolve, and customers will prefer nonelectronic markets or hierarchies over their electronic counterparts.

4. The distribution of Ex-Ante actions

The steps in the supplier's and customer's processes should be viewed as functional requirements for actors, being either employees or systems, who can support Ex-Ante processes. Throughout the rest of this article, Champy's 7 steps *will* be called **customer functionality**, whereas the 5 steps on the supplier's side *will* be called **supplier functionality**. However, functionality is not enough; systems must also be accessible and available to prospective customers. In earlier work, Creemers (1997) shows that access and availability can be measured.

Access

1. Access **is high** when a customer can contact a supplier's actors immediately and from anywhere. This is the case when the supplier has a dense **branche** network or when **Ex-Ante** systems are accessible through datacommunication (**EDI**, Internet, pc-applications).
2. Access is **medium** when a supplier has only few branches or is accessible by telephone during working hours only.
3. Access is low when the supplier has only one or few branches or when Ex-Ante systems are accessible only through mail.

Availability

1. Availability **is high** in interactive business processes, where actors are immediately available to customers along the entire service process. A well-staffed helpdesk, a fire department and fault-tolerant on-line computers are examples of actors with high availability scores.
2. Availability is **medium** in transaction-oriented processes, where actors are available to customers along the entire service process, though not immediately and not constantly. Many professionals (management consultant, programmer, dentist) are actors with medium availability scores.
3. Availability is low when actors perform their actions according to the supplier's time scheme, without being influenced by the customer. This (low availability) is the case in many governmental services and in simple actions such as check handling.

Combining access, availability and the two types of functionality, provides four dimensions along which electronic hierarchies and electronic markets can be analyzed and compared with regards to their support of Ex-Ante activity.

	Access	Availability	Customer functionality	Supplier Functionality
Low				
Medium				
High				

Figure 2. Dimensions **of** Ex-Ante activity (content and distribution)

Below, the Ex-Ante support in a number of electronic markets and hierarchies (Amazon bookshop, the 5 CLO systems, and a few modem financial service suppliers on the Internet) are reviewed.

Amazon Bookshop

When Amazon's Ex-Ante support is rated along the dimensions, the following scores appear.

1. **Access is high.** The Internet provides high access (24 hours, 7 days a week) to the virtual book store computers.
2. **Availability is high.** Amazon's computers are immediately available to customers along the entire service process, up till the settlement of the agreement.

3. **Customer functionality is medium or high.** Amazon fully meets three basic consumer needs mentioned by Champy (knowledge, interaction, networking), whereas other needs, such as sensory experience and ubiquity are partially met.
4. **Supplier functionality is high.** Amazon supports all steps in the supplier process.

CLO systems

When re-interpreting the mortgage systems and the procedure descriptions as given by Hess & Kemerer (1994) in terms of access, availability and functionality, the CLO systems' scores on Ex-Ante support were as follows (figure 3):

	Access	Availability	Customer functionality	Supplier functionality
Shelternet	L	H	L	H
LoanExpress	L	H	L	M/H
Rennie Mae	L	H	L	M
Prudential's CLOS	L	H	L	M
Mortgage Power Plus	M	H	L	H

Figure 3. CLO systems' scores on Ex-Ante support

1. **Access was low or medium**, since all entry points were located at (a limited number) of existing realtor's offices. Moreover, some of the systems printed application forms, which had to be posted for further processing. In some cases customers even had to visit more than one office. From the 5 systems, the Citicorp system would have the best access scores.
2. **Availability was high**, but for only a limited number of actions (selecting the loan). In some systems, large parts of the processing was still paperbased and batchwise. From the 5 systems, the Citicorp system would have the best availability scores.
3. **Customer functionality was low**. As was concluded above, the systems generally did not meet Champy's criteria other than knowledge and interaction. From the 5 systems, both the First Boston and the Citicorp system would have the best functionality scores.
4. **Supplier functionality was medium or high**. Two systems supported all steps in the supplier process, whereas others supported only knowledge, interaction and advise.

From an Ex-Ante support perspective, the most successful implementation was Citicorp's Mortgage Power Plus, the system which appeared to generate the highest loan volume. Its relative success may well be explained by the higher scores on the three dimensions.

SFNB

The SFNB bank, the first bank (electronic hierarchy) to exist solely on the Internet, was founded by software professionals. This bank offers simple financial products, but does not sell loans via the Internet. It rather invites interested prospective borrowers to come to the newly opened (physical) Atlanta office (SFNB, 1997). The loan is settled in interpersonal interaction and paper forms handling processes.

Access is high (Internet), but *availability* and both *customer* and *supplier functionality* are low (no loan offer nor information). Employees in the Atlanta office may score high on functionality (customer and supplier), but low on access for every prospective borrower outside of Atlanta, and medium on availability. SFNB tries to combine two totally different, and not interconnected concepts.

E-loan

E-Loan is a multi-lender Internet broker (electronic market), founded by two mortgage experts. The site allows borrowers to access wholesale lending sources, providing customized mortgage quotes, product comparison, loan recommendation and services typically performed by a seasoned agent (Eloan, 1997). The loan is settled in paper forms handling processes only.

When it comes to Ex-Ante support, *access* and *availability* are high, *supplier functionality* is medium or high (no agreement), and *customer functionality* is as low as in the CLO systems.

Loanshop

The Loanshop, an electronic hierarchy (American Finance and Investment, Inc.) offers mortgages, but does not sell the loans through the Web either. The site offers information and calculators, and enables customers to talk to a mortgage counselor, who is “just a click or a call away”.

(Loanshop, 1997). The loan is settled in telephone sessions and paper forms handling processes.

When it comes to Ex-Ante support, *access* and *availability* are high, and when the prospective borrower uses the opportunity to speak to a mortgage counselor, *customer functionality* is higher than *in all cases* above. *Supplier functionality* is medium or high (no agreement).

Figure 4 gives an overview of the scores of all cases above.

	Access	Availability	Customer Functionality	Supplier Functionality
Amazon	H	H	M/H	H
Shelternet	L	H	L	H
LoanExpress	L	H	L	M/H
Rennie Mae	L	H	L	M
Prudential's CLOS	L	H	L	M
Citicorp MPP	L/M	H	L	M/H
SFNB	H	L	L	L
Eloan	H	H	L	M/H
Loanshop	H	H	H	M/H

Figure 4. Overview of scores on Ex-Ante activity.

Seen from the Ex-Ante perspective, the various lenders and mortgage brokers, markets and hierarchies may not be expected to perform equally successful. Ranking them from most to least successful tentatively results in the following list.

1. Loanshop
2. Eloan
3. Citicorp's MPP
4. Shelternet
5. LoanExpress
6. Rennie Mae
7. Prudential's CLOS
8. SFNB

Future research will ~~will~~ include more cases and decide whether this prediction is correct or not.

5. Virtual communities

While discussing the support of Ex-Ante processes, virtual communities must be addressed too (see e.g. The Economist, 1997; Business Week, 1997; Information Week, 1996).

According to Champy, virtual communities are:

'[f]orming around groups of consumers with a common interest. The technology of the Internet gives these people an unprecedented means of interacting with each other, and with providers of goods and services, to achieve their goals' (2006).

A **known** example of a **virtual** community **is Parent Soup**, in which parents communicate, discuss and give each other advice on a variety of family related topics (Parent Soup, 1997).

Manufacturers of relevant goods (toys, baby products, books, software) are invited to participate in the discussions and supply the community members with research the users can learn from.

Parent Soup sets up "bridge sites" (closely linked companion Web sites), for participating manufacturers, such as a site for the children's cough syrup Triaminic, containing parenting information, including child safety tips.

Another example is **The Well**, which was founded in 1985 and has always been *committed to providing individuals, groups and businesses with rich conversational environments, and with state-of-the-art **tools and services to build and enhance communities***. It comprises over 250 subject areas (conferences) which range from **the technical and specific to the abstract and surreal**. Members are free to participate in these conferences. The Well has 11,000 members and charges them \$10 per month for access and participation (The Well, 1997).

A final example **is Agriculture Online**, founded two years ago to bring timely information about the agricultural industry. Today it is a cluster of suppliers (publishers, service suppliers, institutions), and members (companies and individual users). It offers discussion forums for people "genuinely interested in solving problems and sharing knowledge on topics ranging from machinery to livestock, precision ag to down-on-the-farm humor". Membership is free of charges.

Some virtual communities do not allow commercial activity other than advertizing (e.g. The Well), whereas others even stimulate transactions (e.g. Agriculture Online). Virtual communities are neither hierarchies nor markets, but economic organizations to form countervailing (Galbraith, 1956) or bargaining (Porter, 1980) power vis a vis suppliers. The community's facilities support mainly the customer's Ex-Ante process (knowledge, interacting, networking), whereas the suppliers' Ex-Ante actions are supported only under specific conditions. In other words: access, availability and customer functionality are high, but supplier functionality is low.

Hagel & Armstrong (1997) speculate when they say that virtual communities will eventually

"evolve into agents for members, managing their integrated profiles to maximize value to members" (p.84).

If this evolution is going to take place, then virtual communities may develop into very successful electronic markets in which the support of both supplier and customer functionality are balanced.

6. Markets, hierarchies and evolution processes

While analyzing their Ex-Ante support, markets, hierarchies and virtual communities have been treated alike in the preceding sections. Along the way, however, three different types of markets have been detected, which can be explicated now. This will be done in comparison to EMH terminology.

1. **Supplier market.** In this type of market supplier Ex-Ante processes are supported mainly, like in some of the CLOs. Scores on supplier functionality are higher than those on customer functionality. Supplier markets are similar to Malone's biased and unbiased markets. The customer can choose between alternate suppliers, but experiences little Ex-Ante support.
2. **Customer market.** In this type of market customer Ex-Ante processes are supported mainly. The scores on customer functionality are higher than those on supplier functionality. This type of market, including virtual communities, was not recognized by Malone et al.. Customers are very well supported in their Ex-Ante processes, but direct connections to suppliers may not be facilitated.
3. **Balanced market.** In this type of market the two Ex-Ante processes are balanced, like in the Amazon Bookshop and Eloan. Balanced markets comprise more steps in the customer process than just *providing personalized decision aids to help individual buyers select from the alternatives available*, as suggested by Malone et al..

These 3 types of markets exist next to **hierarchies**. Electronic hierarchies will always be oriented on the supplier's Ex-Ante process mainly, but can very well support customer Ex-Ante processes too. E.g. Cisco Systems Inc. offers free of charge computerized configuration help to its prospective computer buyers. This **powerfull** Ex-Ante support makes Cisco hard to beat, even by electronic markets that can not outperform Cisco's support.

The only difference between hierarchies and **supplier** markets is the ability or willingness to show competing products from different suppliers. But, as the cases above have shown, choice is not

enough to be successful as a market. A large firm may have a broad product range too. Real support of customer Ex-Ante processes is conditional for success. This implies that improving Ex-Ante support may be more attractive to a large electronic hierarchy than entering an evolution process towards an electronic supplier market. This may explain why so few “moves to the market” have occurred so far.

Electronic supplier markets are likely to evolve when the suppliers’ Ex-Ante costs are high and when joint ICT application can support the suppliers’ Ex-Ante processes (process (a) in figure 5). However, when electronic hierarchies improve their customer Ex-Ante support, existing supplier markets are forced to do the same, which will eventually transform them into balanced markets (process (c) in figure 5).

Electronic customer markets are likely to evolve when the customers’ Ex-Ante costs are high and when joint ICT application decreases those costs (process (b) in figure 5). However, when electronic hierarchies pay more attention to the customer process, and when balanced supplier markets evolve into balanced markets, customer markets are forced to evolve into balanced markets too (process (d) in figure 5).

Putting this together, it is now possible to draw two evolution processes. One of these processes has earlier been recognized by Malone at al. and runs from hierarchies via biased and unbiased markets into personalized markets. Though personalized markets comprise less customer Ex-Ante support than balanced markets, this process can easily be matched with the process given in this article, **running** from hierarchies via supplier markets into balanced markets. Since Malone at al. did not recognize customer markets, they could not predict the evolution of customer markets nor the process from customer markets into balanced markets, like Hagel & Armstrong did.

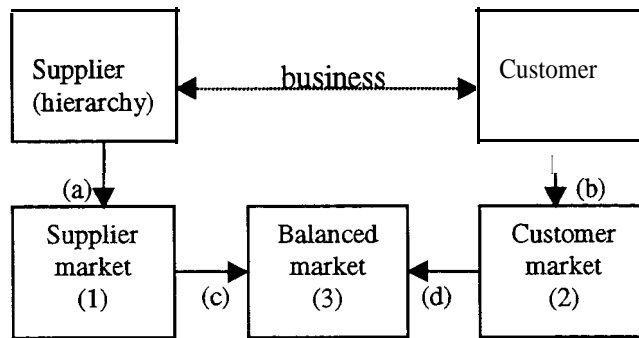


Figure 5. *Evolution processes in hierarchies and markets*

7. The Move to Ex-Ante Hypothesis

All the above has made clear that the EMH must be regarded as a specific implementation of transaction cost economics, one with a dominant supplier’s perspective. Therefore, it will be valid only under the presumption that the customer Ex-Ante processes and ICT support therein are of limited importance for the transfer of goods and services in the value chain. In other words: when

customers have low Ex-Ante transaction costs and do not utilize ICT such as the Internet to jointly decrease these costs, or to get more out of it. This assumption excludes large parts of the financial market and may explain why Hess & Kemerer could not find support the EMH in their CLO research.

Moreover, the EMH does not include strategic options that both suppliers and customers have while organizing economic activity. Customers may join loyalty programs, with which they decrease the supplier's Ex-Ante transaction costs, or may form customer markets to decrease their own Ex-Ante transaction costs and to increase their **bargaining** power. Hierarchies may improve the customer Ex-Ante support, with which they may outperform supplier markets, or decrease its own Ex-Ante transaction costs, in order to avoid the need to enter in an evolution process towards a supplier market. These strategic options may facilitate or hamper the evolution of electronic markets. This implies that utilization of ICT need not result in a move to the market after all.

These problems can not be solved by augmentation of the EMH, as Hess & Kemerer have suggested. A new hypothesis will be necessary. This new hypothesis should be based on transaction cost economics and should preferably be dealing with Ex-Ante transaction costs, the content and distribution of Ex-Ante activity. It also should include strategic options suppliers and customers have in organizing economic activity. This new hypothesis will be called The Move to Ex-Ante hypothesis, MEA

The MEA postulates that both suppliers and customers are confronted with Ex-Ante transaction costs, and will constantly seek opportunities to support their own Ex-Ante processes (move to **Ex-Ante**), while utilizing modern ICT. Their goal need not be a net decrease of transaction costs, but may also be a drive to get more results out of it.

Customers and suppliers will use different ICT-applications to support their Ex-Ante transaction processes. Suppliers will prefer technology which enables them to trace prospective borrowers in their moment of value, such as marketing databases, smart cards, fancy electronic commerce sites, applets, push technology, and the like. Customers will prefer electronic agents, communication facilities, such as chat boxes and Internet conference facilities, which will help them to communicate and to find and test alternative products.

Dependent on the transaction cost level and on the opportunities of the ICT support, this move to Ex-Ante may lead to a variety of governance structures, both electronic hierarchies and electronic markets of a certain type, as has been shown in section 6.

8. Implications

The MEA is both broader and narrower than the EMH. It is broader in the sense that it includes the development of virtual communities, and that it includes suppliers' and customers' strategic options, but it is narrower in the sense that it restricts to the Ex-Ante stage of transactions. This has two research implications.

1. It may be usefull to reinterpret part of the EMH research that has been done so far, like that of Hess & Kemerer (1994), in order to further test the MEA Interesting research questions would be (1) in what economic areas balanced or unbalanced Ex-Ante support are likely to be found, and (2) who are the most likely actors for successful process balancing.
2. It also opens the opportunity to interpret the evolution of virtual communities in the light of electronic markets. Interesting research questions would be (1) how Ex-Ante activity is performed in various virtual communities, (2) how virtual communities develop into agents, and (3) how they might develop into electronic markets.

Moreover, the MEA forms a bridge between information and marketing sciences. Marketing concepts such as technology adoption and diffusion can be used to infer the pace in which electronic hierarchies and markets will evolve.

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